



# APX 8500

ALL-BAND P25 MOBILE RADIO



## UNLIMITED MOBILITY. MAXIMUM CONNECTIVITY.

Your next incident doesn't care about frequencies and neither should your first responders. Give them the communication tools to stay connected and stay safe wherever the call takes them. Give them the APX 8500 all-band mobile radio.

The APX 8500 radio enables you to exchange critical voice and data seamlessly with multiple agencies and jurisdictions operating on different radio bands. The available high-power transmitter gives you extraordinary P25 range while the integrated Wi-Fi or tethered

in-vehicle broadband modem can extend communication beyond P25 radio service areas. Offload data to a broadband connection and create a data ecosystem in and around your vehicle. Or, use your broadband connection to send and receive P25 voice and data when outside of P25 coverage. And when your vehicle sustains a high impact, the radio can automatically send an alert to dispatch.

Stay connected and stay safe in more ways than ever with the all-band APX 8500 mobile radio.





## ALL-BAND CONNECTIVITY

### ALL BANDS. NO BOUNDARIES.

With a 4-in-1 mobile radio and an all-band antenna, you now have the ability to stay connected and expand communications across multiple agencies with one device. Extend your reach further with an available high-power transmitter and communicate with widely dispersed teams across different bands.



## BUILT-IN Wi-Fi

### VOICE AND DATA, ALL AT ONCE

Packed with all the connections you need, the APX 8500 keeps your team in touch and within reach of over-the-air updates. Receive new codeplugs, firmware updates and software features at the speed of Wi-Fi— without interruptions to voice communications.



RF antenna port

GPS

Wi-Fi

Accessory connector

DC power



## DESIGNED TO SECURE AND PROTECT

### KEEP VOICE AND DATA PROTECTED

The APX 8500 secures voice and data using multiple hardware encryption algorithms and the ability to rekey over the air, so it's protected from scanners and eavesdroppers. What's more, P25 Radio Authentication ensures only valid users can access the system while the available two-factor authentication secures database logins.

## O2 CONTROL HEAD

### EXTREME USABILITY

The O2 control head provides rugged simplicity for efficient and confident communication. Extreme controls with easy to read color display and a built-in 7.5 watt speaker provides clear visual and audible user experiences. Available in high impact green or black.



## O3 HANDHELD CONTROL HEAD

### HANDHELD FLEXIBILITY

The O3 corded control head fits all your mobile controls in your hand. With the O3 your radio controls are never out of reach.



# APX 8500 CONTROL HEADS<sup>1</sup>



## E5 CONTROL HEAD

### UNMATCHED READABILITY. OPTIMIZED USABILITY.

A bright color display and intelligent lighting makes the E5 easy to read under any condition while the optimized tactility and button placement reduces inadvertent actuations.

## O7 CONTROL HEAD

### INTEGRATED MULTI-FUNCTIONALITY

The O7 is a sophisticated control head with a color display and built-in keypad. It can integrate your radio vehicle control into a single ergonomic interface and supports dual radio installations.

<sup>1</sup> Compatible O9 control head not shown.

# FEATURES

## OPERATION MODES

Digital Trunking: 9600 Baud APCO P25 Phase 1 FDMA and Phase 2 TDMA

Digital Conventional: APCO 25

Analog Trunking: 3600 Baud SmartNet, SmartZone, Omnilink

Analog Conventional: MDC 1200

ASTRO® 25 Integrated Voice and Data

SmartConnect Multi-net Connectivity<sup>2</sup>

## FREQUENCY BANDS

All-band: Simultaneous Operation in VHF, UHF Range 1, UHF Range 2, 700 and 800 MHz Bands

100 Watt High-Power available in VHF and UHF Range 1 bands (High-Power model only)

Up to 3,000 Channels

## ADDITIONAL CONNECTIVITY

Wi-Fi 802.11 b/g/n<sup>2</sup>

Data Modem Tethering<sup>2</sup>

## MANAGEMENT

Radio Management

Customer Programming Software

## LOCATION-TRACKING

Integrated GPS/GLONASS for Outdoor Location Tracking

Mission-Critical Geofence<sup>2</sup>

## SECURITY

256-bit AES, ADP, DES, DVP<sup>2</sup>

FIPS 140-2 Level 3, FIPS 197

P25 Authentication<sup>2</sup>

Multikey for 128 keys and Multi-algorithm<sup>2</sup>

Over-The-Air-Rekeying (OTAR)<sup>2</sup>

## USER INTERFACE

07 Multi Functional Control Head

E5 Enhanced Control Head

03 Handheld Control Head

02 Extreme Usability Control Head

Supports the discontinued 09 Control Head and the 05 Control Head

## OTHER FEATURES

Intelligent Priority Scan

Instant Recall

Impact Detection<sup>2</sup>

Intelligent Lighting

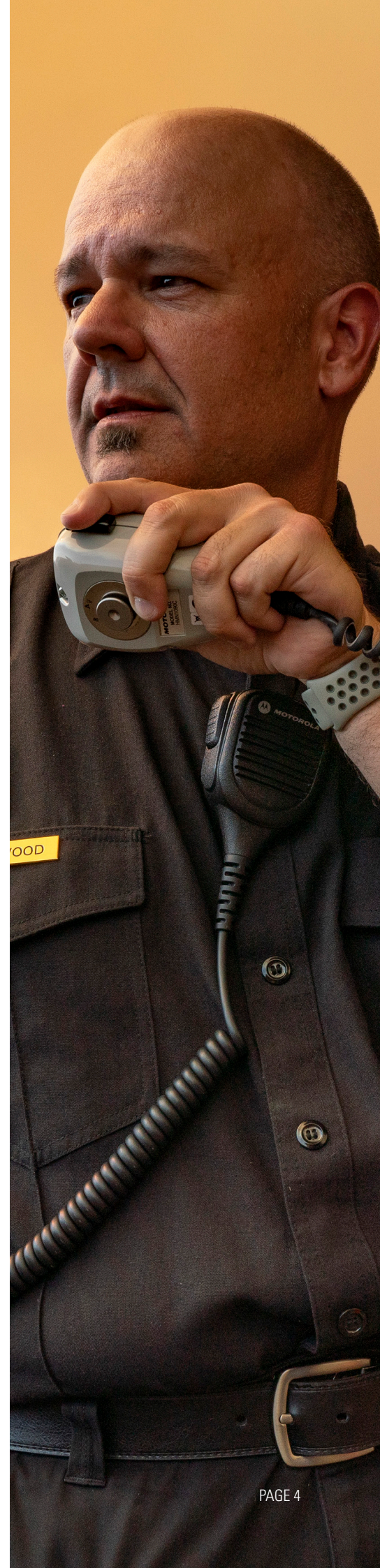
Tactical Inhibit<sup>2</sup>

Digital Tone Signaling<sup>2</sup>

12 Character RFID Asset Tracking<sup>2</sup>

ViQi Virtual Partner<sup>2</sup>

<sup>2</sup>Optional Feature





#### DIMENSIONS AND WEIGHT

	Dimensions (H x W x D)	Weight
O7 Control Head - Remote Mount	51 x 178 x 81mm (2.0 x 7.0 x 3.2 in)	-
E5 Control Head - Remote Mount	51 x 178 x 79 mm (2.0 x 7.0 x 3.1 in)	-
O5 Control Head - Remote Mount	51 x 178 x 74 mm (2.0 x 7.0 x 2.9 in)	-
O2 Control Head - Remote Mount	68 x 206 x 96 mm (2.7 x 8.1 x 3.8 in)	-
Mid Power Radio Transceiver and O7 Control Head - Dash Mount	51 x 178 x 256 mm (2.0 x 7.0 x 10.1 in)	3.1 kg (6.8 lbs)
Mid Power Radio Transceiver and E5 Control Head - Dash Mount	51 x 178 x 255 mm (2.0 x 7.0 x 10.0 in)	3.1 kg (6.8 lbs)
Mid Power Radio Transceiver and O5 Control Head - Dash Mount	51 x 178 x 250 mm (2.0 x 7.0 x 9.8 in)	3.1 kg (6.8 lbs)
Mid Power Radio Transceiver and O2 Control Head - Dash Mount	68 x 206 x 271 mm (2.7 x 8.1 x 10.7 in)	3.3 kg (7.23 lbs)
Mid Power Radio Transceiver and Remote Mount	51 x 178 x 232 mm (2.0 x 7.0 x 9.1 in)	2.9 kg (6.4 lbs)
High Power Radio Transceiver and Remote Mount	88 x 248 x 320 mm (3.4 x 9.7 x 12.6 in)	8.0 kg (17.6 lbs)



248mm

88mm



320mm

248mm

APX 8500 High-Power Model Shown

# PERFORMANCE AND REGULATORY

TRANSMITTER - TYPICAL PERFORMANCE SPECIFICATIONS										
	VHF		UHF R1		UHF R2		700 MHz		800 MHz	
Frequency Range Band Splits	136-174 MHz		380-470 MHz		450-520 MHz		764-776, 794-806 MHz 806-825, 851-870 MHz		764-776, 794-806 MHz 806-825, 851-870 MHz	
Channel Spacing	30/25/12.5 kHz		25/20/12.5 kHz		25/20/12.5 kHz		25/20/12.5 kHz		25/20/12.5 kHz	
Maximum Frequency Separation	Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit	
Rated RF Output Power <sup>3</sup> (Adjustable)	1-50 W (Mid Power) 1-100 W (High Power)		1-40 W (Mid Power) 1-100 W (High Power)		1-45 W (450-485 MHz) 1-40 W (485-512 MHz) 1-25 W (512-520 MHz)		1-30 W		1-35 W	
Frequency Stability <sup>3</sup> (-30°C to +85°C; +25°C Ref.)	±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM	
Modulation Limiting	±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±5/±4 (NPSPEC) / ±2.5 kHz	
Modulation Fidelity (C4FM) 12.5 kHz Digital Channel	1.10%		1.10%		1.10%		1.10%		1.10%	
Emissions <sup>3</sup>	Conducted -85 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm	Conducted -75/-85 dBc	Radiated -20/-40 dBm	Conducted -75 dBc	Radiated -20 dBm
Audio Response <sup>3</sup>	+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)	
FM Hum & Noise <sup>3</sup> (25 kHz / 12.5 kHz)	53 dB / 52 dB		53 dB / 50 dB		53 dB / 50 dB		50 dB / 48 dB		50 dB / 48 dB	
Audio Distortion <sup>3</sup> (25 & 20 kHz / 12.5 kHz)	0.50% / 0.50%		0.50% / 0.50%		0.50% / 0.50%		0.50% / 0.50%		0.50% / 0.50%	

RECEIVER - TYPICAL PERFORMANCE SPECIFICATIONS										
	VHF		UHF R1		UHF R2		700 MHz		800 MHz	
Frequency Range Band Splits	136-174 MHz		380-470 MHz		450-520 MHz		764-776 MHz	799-806 MHz	851-870 MHz	
Channel Spacing	30/20/12.5 kHz		25/20/12.5 kHz		25/20/12.5 kHz		25/20/12.5 kHz		25/20/12.5 kHz	
Minimum Frequency Separation	Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit	
Audio Output Power 3% distortion, 8/3.2 Ohm speakers	7.5 W/15 W		7.5 W/15 W		7.5 W/15 W		7.5 W/15 W		7.5 W/15 W	
Frequency Stability <sup>1</sup> (-30 °C to +85 °C; +25 °C Ref.)	±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM	
Analog Sensitivity <sup>2</sup> (12 dB SINAD)	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	-121 dBm (0.199 µV)	-120 dBm (0.224 µV)	-121 dBm (0.199 µV)	
Digital Sensitivity (5% BER)	-123 dBm (0.158 µV)	-119 dBm (0.251 µV)	-123 dBm (0.158 µV)	-119 dBm (0.251 µV)	-123 dBm (0.158 µV)	-119 dBm (0.251 µV)	-123 dBm (0.158 µV)	-120 dBm (0.224 µV)	-121.5 dBm (0.188 µV)	
Intermodulation Rejection (12.5 kHz / 25 kHz)	Pre-Amp 84 dB / 85 dB	Standard 86 dB / 96 dB	Pre-Amp 82 dB / 83 dB	Standard 86 dB / 86 dB	Pre-Amp 82 dB / 83 dB	Standard 86 dB / 86 dB	85 dB / 85 dB		85 dB / 85 dB	
Spurious Rejection	90 dB		90 dB		90 dB		100 dB		100 dB	
Audio Response <sup>3</sup>	+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)		+1, -3 dB (EIA)	
Audio Distortion at rated <sup>3</sup>	1.20%		1.20%		1.20%		1.20%		1.20%	
Selectivity <sup>3</sup> (12.5 kHz / 25 kHz / 30 kHz)	76 dB 87 dB 90 dB		76 dB 82 dB -		76 dB 82 dB -		72 dB 82.5 dB -		72 dB 82.5 dB -	

POWER AND BATTERY DRAIN					
	VHF	UHF R1	UHF R2	700 MHz	800 MHz
Frequency Range Band Splits	136-174 MHz	380-470 MHz	450-520 MHz	764-775, 794-806 MHz	806-825, 851-870 MHz
RF Power Output	1-50 W (mid-power) 1-100 W (high-power)	10-40 W (mid-power) 1-100 W (high-power)	1-45 W (450-485 MHz) 1-40 W (485-512 MHz) 1-25 W (512-520 MHz)	1-35 W	1-35 W
Operation	13.8 V DC ±20% Negative Ground	13.8 V DC ±20% Negative Ground	13.8 V DC ±20% Negative Ground	13.8 V DC ±20% Negative Ground	13.8 V DC ±20% Negative Ground
Standby at 13.8 V	1.4 A	1.4 A	1.4 A	1.4 A	1.4 A
Receive Current at Radio Audio at 13.8 V	3.2 A	3.2 A	3.2 A	3.2 A	3.2 A
Transmit Current at Rated Power (mid-power)	8 A @ 15 W 15 A @ 50W	8 A @ 15 W 15 A @ 40W	8 A @ 15 W 13 A @ 45W	8 A @ 15 W 15 A @ 50W	8 A @ 15 W 13 A @ 50W
Transmit Current at Rated Power (high-power)	8 A @ 15 W 30 A @ 40 W	8 A @ 15 W 30 A @ 45 W	-	-	-

<sup>3</sup> Measured in the analog mode per TIA / EIA 603 single-tone method under nominal conditions.

LOCATION - TRACKING	
Channels	12
Tracking Sensitivity	-164 dBm
Accuracy*	<5 meters (95%)
Cold Start	<60 seconds (95%)
Hot Start	<5 seconds (95%)
Mode of Operation	Autonomous (Non-Assisted) GNSS or SBAS

FCC/IC TYPE ACCEPTANCE	
FCC/IC ID	Band and Power Level
FCC ID: AZ492FT7089 IC ID: 109U-92FT7089	764-776 MHz (10-30 W)
	794-806 MHz (10-30 W)
	806-824 MHz (10-35 W)
	851-870 MHz (10-35 W)
	136-174 MHz (10-50 W)
	380-470 MHz (10-40 W)
	450-485 MHz (10-45 W)
	485-512 MHz (10-40 W)
FCC ID: AZ492FT7118 IC: N/A	512-520 MHz (10-25 W)
	136-174 MHz (1-100 W)
	380-470 MHz (1-100 W)

\*Measured conductivity with >6 satellites visible at a nominal -130 dBm signal strength.

ENCRYPTION	
Supported Encryption Algorithms	256-bit AES, ADP, DES, DES-XL, DES-OFB, DVP-XL
Encryption Algorithm Capacity	8
Encryption Keys per Radio	Module capable of storing 1024 keys. Programmable for 128 Common Key Reference (CKR) or 16 Physical Identifier (PID)
Encryption Frame Re-sync Interval	P25 CAI 300 mSec
Encryption Keying	Key Loader
Synchronization	XL – Counter Addressing OFB – Output Feedback
Vector Generator	National Institute of Standards and Technology (NIST) approved random number generator
Encryption Type	Digital
Key Storage	Tamper protected volatile or non-volatile memory
Key Erasure	Keyboard command and tamper detection
Standards	FIPS 140-2 Level 3, FIPS 197

ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature	-30°C/+60°C
Storage Temperature	-40°C/+85°C
Humidity	Per MIL-STD
ESD	IEC 801-2 KV
Water & Dust Intrusion	IP56





**MOBILE MILITARY STANDARDS 810, C, D, E, F & G**

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G	
	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	I/II	500.5	II
High Temperature	501.1	I, II	501.2	I/A1, II/A1	501.3	I/A1, II/A1	501.4	I/Hot, II/Hot	501.5	I/A1, II/A1
Low Temperature	502.1	I	502.2	I/C3, II/C1	502.3	I/C3, II/C1	502.4	I/C3, II/C1	502.5	I/C3, II/C1
Temperature Shock	503.1	I Proc	503.2	1/A1C3	503.3	1/A1C3	503.4	I	503.5	I/C
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I	505.5	I/A1
Rain	506.1	I, II	506.2	I, II	506.3	I, II	506.4	I, III	506.5	I, III
Humidity	507.1	II	507.2	II	507.3	II	507.4	I Proc	507.5	II/Aggravated
Salt Fog	509.1	I Proc	509.2	I Proc	509.3	I Proc	509.4	I Proc	509.5	I Proc
Blowing Dust	510.1	I	510.2	I, II	510.3	I, II	510.4	I, II	510.5	I, II
Vibration	514.2	VIII/F, Curve-W	514.3	I/10, II/3	514.4	I/10, II/3	514.5	I/24	514.6	I/24
Shock	516.2	I, III, V	516.3	I, V, VI	516.4	I, V, VI	516.5	I, V, VI	516.6	I, V, VI

For more information, please visit us on the web at: [www.motorolasolutions.com/APX](http://www.motorolasolutions.com/APX)

Motorola Solutions Ltd. Nova South, 160 Victoria Street, London, SW1E 5LB, United Kingdom.

MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M Logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license. All other trademarks are the property of their respective owners. © 2020 Motorola Solutions, Inc. All rights reserved. (07-20)